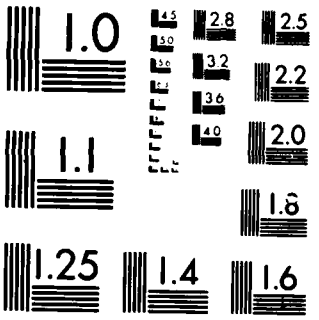
AD-A164 918 EVALUATION OF EXPERIMENTAL RADIO-METEOROLOGICAL MEASUREMENTS PACKAGE (ERM..(U) ARMY AVIATION ENGINEERING FLIGHT ACTIVITY EDWARDS AFB CA C F MITTAG 1/1

UNCLASSIFIED 17 MAY 77 USAAEFA-77-20 F/G 1/3 NL



DEPARTMENT OF THE ARMY
US ARMY AVIATION ENGINEERING FLIGHT ACTIVITY
Edwards Air Force Base, California 93523-5000

(2)

SAVTE-TI

17 MAY 1977

SUBJECT: Evaluation of Experimental Radio-Meteorological Measurements Package (ERMMP) Antenna Installed on U-21A Wing, AEFA Project No. 77-20

Commander
US Army Aviation Systems Command
ATTN: DRSAV-EQI
P.O. Box 209
St. Louis, Missouri 63166

1. References: a. Letter, AVSCOM, DRSAV-EQI, subject: USAAVSCOM Test Request No. 77-20, 6 May 77.

b. Letter, AVSCOM, DRSAV-EQI, subject: Safety-of-Flight Release for U-21 S/N 18008 with Experimental Radio-Meteorological Measurements Antenna Installed (Test Request 77-20), 9 May 77.

2. Reference 1a tasked AEFA to conduct a qualitative evaluation of the ERMMP antenna installed on the right wing of U-21A airplane S/N 66-18008. Reference 1b established the testing limitations to be observed during the testing. The ERMMP antenna was received 10 May 77 and installed by AEFA on the test aircraft 11 May 77.

3. The qualitative flight test of the ERMMP antenna was accomplished on 11 May 77 at Edwards AFB, CA and required 0.9 flight hours. A T-28B airplane was utilized as chase for 0.9 flight hours. Total cost of the evaluation was $206 based on aircraft flying cost.

4. The test aircraft was flown at an average center-of-gravity of 150.7 inches and average gross weight of 8315 pounds. All testing was accomplished in the configurations shown in inclosure 1 and at the conditions shown in inclosure 2. An airspeed sweep from 94 to 208 knots calibrated airspeed (KCAS) was conducted in the cruise configuration with lateral control pulses induced at 140, 169 and 203 KCAS. Lateral control characteristics were investigated by performing left and right lateral control steps and left steady heading sideslips at all normal aircraft configurations and corresponding airspeeds. In addition, 2.5g left and right rolling pullouts were performed at 169 KCAS.

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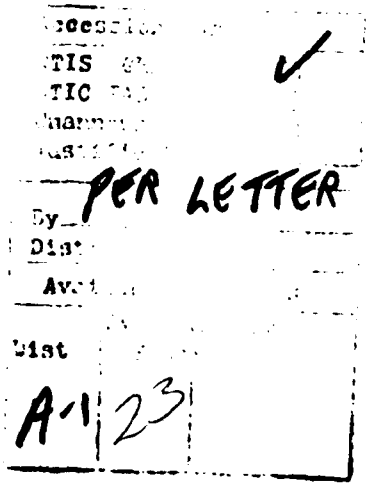
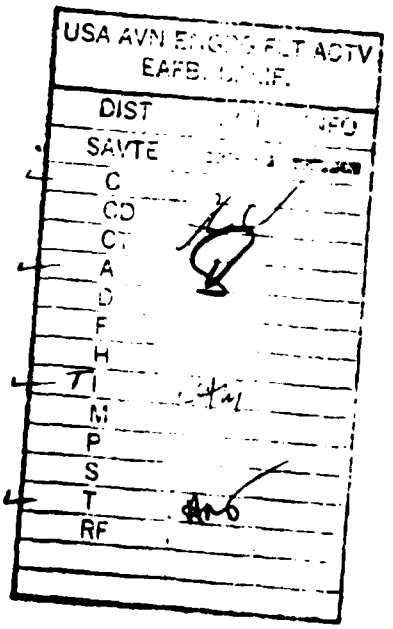
5. During the testing there were no observed changes in the lateral control characteristics of the U-21A. No tendency for aileron oscillation, buffet or feedback into the U-21A control system was noted. At airspeeds above 150 KCAS the 1/4 inch diameter antenna sensors vibrated approximately ± one diameter and were bowed aft approximately 2 diameters from their static position. The lateral control pulses or steps did not cause any further excitation of the 1/4 inch antenna. Within the scope of this test the U-21A with ERMMP antenna installed can be operated within the flight envelope and operating limits of the current operator's manual.

6. Author: This report was prepared by MAJOR CARL F. MITTAG, Project Officer.

2 Incl
as

JERRY M. BOYLE
Colonel, Armor
Commanding





Aircraft Configuration Definitions

Configuration	Gear Position	Flap Position (percent)	Power Setting	Propeller Speed (rpm)
Takeoff (TO)	Down	0	TOP[1]	2200
Climb (CL)	Up	0	MCP[2]	2000
Cruise (CR)	Up	0	PLF[3]	1900
Descent (D)	Up	0	IDLE	2200
Powered Approach (PA)	Down	35	PLF	1900
Landing (L)	Down	100	as required	2200

[1]Takeoff power: Maximum power available.
[2]Maximum continuous power.
[3]Power for level flight.

Incl 1

Test Conditions

Test	Calibrated Airspeed (kt)	Average Pressure Altitude (ft)	Configuration	Remarks
Airspeed Sweep	90-200	10000	CR	Left and right lateral control pulses 140, 160, 200 KCAS.
Lateral Control Characteristics	95	10000	TO	Left and right control steps, left steady heading sideslip 1 ball out.
	140	10000	CL	
	135	10000	CR	
	200	3000	D	
	120	10000	PA	
	90	10000	L	
Pullouts	160	3000	CR	Left and right rolling pullouts, 30° roll attitude, 2.5g.

Incl 2

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